SOV/142-58-4-21/30

AUTHOR: Professors: Polivanov, K.M., Netushil, A.V., Fradkin,

P.M.

TITLE:

A Symposium of Scientific Essays of the Belorussian Polytechnic Institute imeni I.V. Stalin, Nr 61, "Powerand Electrical Engineering," 1957. (Sbornik nauchnykh trudov Belorusskogc Politekhnicheskogo instituta imeni I.V.

Stalina, Vypusk 61, Energetika, Elektrotekhnika, 1957)

Izvestiya vysshikh uchebnykh zavedeniy - Radiotekhnika, 1958, Nr 4, pp 510-511 (USSR) PERIODICAL:

This is a review of the above mentioned book. ABSTRACT:

SUBMITTED: April 21, 1958

Card 1/1

FRADKIN, S.A.

Making and using standard prestressed ceiling beams. Prom. stroi. 38 no.11:48-51 '60. (MIRA 13:10)

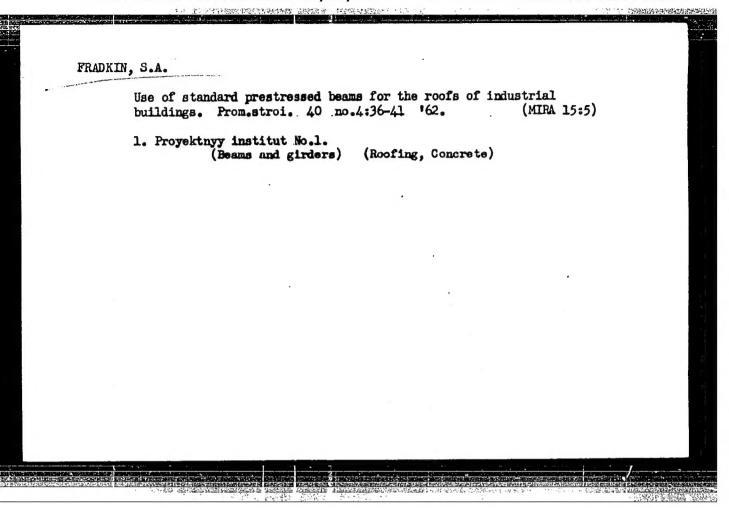
1. Proyektnyy institut Wo.1 Minstroya RSFSR.
(Ceilings) (Prestressed concrete)

FRACKIN, S.A., ingh.; SCHOLIN, Ya.F., inzh.; ZAROVKINA, N.O., inzh.;

GOFENSHEFER, A.F., inzh.

Manufacture of standard wire-reinforced oncrete barre. Pat.
i zhel. bet. no.7015-319 Jl '61. (MIRA 14.7)

(Perms and girdors)



"APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000413530002-3

Precast reinforced concrete foundations for standard columns.

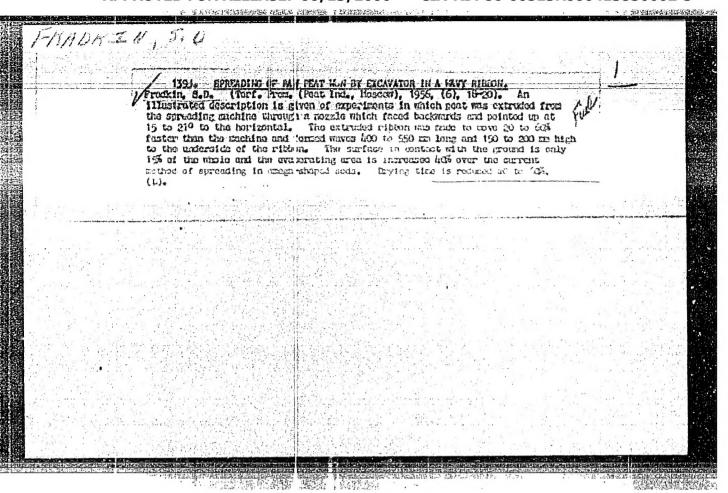
Blul. stroi. (MIRA 16:11)

1. Glavnyy konstruktor proyekta Proyektnogo instituta No.1
Glavnogo upravleniya po stroitel'nomu proyektirovaniyu
predpriyatiy, zdaniy i soorualeniy Gosstroya SSSR.

FRADKIN, S. D.

"Use of Bin Excavators by Medium-Sized and Small Peat Enterprises," Mekh.

Trud. rab., 5, Nol 3, 1952



BOEORYKIN, Ye.P., red.; SARYCHEV, I.I., red.; FRADKIN, S.D., red.; SHAKIROV, R.A., red.; LISOGOR, A.A., red.; VENTSKEVICH, L.A., red.

[Technological information and propaganda at construction projects in Russia] Tekhnicheskaia informatsiis i propaganda na stroikakh Rossii; sbornik statei. Moskva, TSentr. biuro tekhn. informatsii, 1962. 106 p. (MIRA 16:7)

1. Russia (1917- R.S.F.S.R.) Gosudarstvennyy komitet po delam stroitel'stva. (Construction industry—Technological innovations)

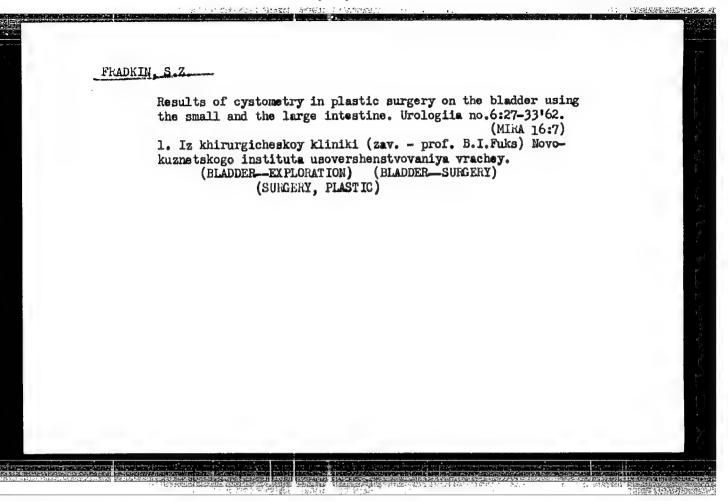
Combined wound of the heart and left lung. Whirurgita 35 no.1:131 Ja '59. (MIRA 12:2) 1. Is travmatologicheskogo otdeleniya (sav. Ye.W. Yel'kina) Prokop'yevskoy gorodskoy bol'nitsy (glavnyy vrach M.M. Sovtsova) Lemerovskoy oblasti. (HEART--WOUNDS AND INJURIES) (EUNGS---WOUNDS AND INJURIES)

FRADKIN, S.Z.

Experimental physiological and histochemical study of the adaptation of intestinal transplants incorporated in the urinary system. Izv. Sib. otd. AN SSSR no.8:103-109 '62.

(MIRA 17:8)

l. Novokuznetskiy gosudarstvennyy institut usovershenstvovaniya vrachey i Institut eksperimental'ney biologii i meditsiny Sibirskogo otdeleniya AN SSSR, Novosibirsk.



CHERVINSKIY, A.A., kand.med.nauk; SELIVANOVA, Z.F.; FRADKIN, S.Z.

Significance of azygography in solving the problem of the operability of cancer of the lungs and esophagus. Vest.khir. no.6:30-36 '62. (MIRA 15:11)

1. Iz kafedry khirurgii (zav. - prof. B.I. Fuks) Novokuznetskogo gosudarstvennogo instituta dlya usovershenstvovaniya vrachey im. S.M. Kirova (Kemerovskaya oblast') i rentgenologicheskogo otdeleniya l-y gorodskoy klinicheskoy bol'nitsy (gl. vrach - S.F. Kirin).

(LUNGS—CANCER) (ESOPHAGUS—CANCER) (ANGIOGRAPHY)

VINOGRADOV, V.V.; FRADKIN, S.Z.

"Hidden" metachromasis of some epithelial mucins. Izv. Sib. otd. AN SSSR no. 11:151-153 '62. (MIRA 17:9)

1. Institut eksperimental'noy biologii i meditsiny Sibirskogo otdeleniya AN SSSR, Novosibirsk.

PRADKIN, V.A. Determination of tuberculin titer in schizophrenia. Ehr. nerv. 1 psikh. 54 no.9:747-751 8 '54. (MERA 7:9) 1. Tallinskiy institut spideniologii, mikrobiologii i gigiyeny Ministerstva zdravookhraneniya Estonskoy SSR. (SCHIZOPHRENIA, immunology, tuberculin titer) (TUBERCULIE REACTION, in schizophrenia)

FRAd Kip, V.A.

USSR/Microbiology - Medical and Veterinary

F-6

Microbiology

Abs Jour

: Ref Zhur-Biologiya, No 1, 1957, 667

Author

: K. A. Akhundova, and V. A. Fradkin

Inst

.

Title

: On Modifications in the Normal Microflora of the Intestine Upon the Simultaneous

Administration of Sintomycin and

Streptomycin

Orig Pub

Naukogude Eesti tervishoid, Zdravookhr.

Sov. Estonii, 1955, sb. 4, 254-260

Abstract

: No abstract.

Card 1/1

FRADKIN V. A.

USSR/Human and Animal Physiology. Blood.

Abs Jour: Ref Zhur-Biol., No 6, 1958, 26794.

Author : V.A. Fradkin.

Title : The Connection Between Posttransfusion Reactions and

the Degree of Allergy to Tuberculin.

Orig Pub: Sov. Mcditsins, 1956, No 9, 71-75.

Abstract: The degree of allergy to tuberculin was studied in

120 patients before and immediately after blood transfusions. The results of the Mantoux reaction over a 48 hour period were taken into account. Positive reactions to tuberculin in dilutions of 1:100,000 and higher were attributed to heightened sensitivity, while reactions to dilutions of 1:1000

Card : 1/3

Inst. Exptt. & Clin. med, AS Est, 55R

USSR/Ruman and Anival Physiology. Blood.

Abs Jour: Ref Zhur-Biol., No 6,1958, 26794.

and lower were attributed to decreased sensitivity. When transfusions of 250 ml of preserved blood were performed upon 82 patients, posttransfusion reactions appeared twice as often as with transfusions of 125 ml (38 patients) and were of a graver nature. With repeated transfusions, independently of the volume of transfused blood (250 or 125 ml), the incidence of posttransfusion reactions, even with high tuberculin titers, decreased from approximately 30 to 35% to 6%, and the course of the reactions was considerably militar. There was no apparent correlation between nature of illness, blood group, Hb content, age and the incidence of posttransfusion reactions. A connection was noted between incidence and severity of posttransfusion reactions and increased allergy to tuber-

Card : 2/3

17

USSR/Human and Animal Physiology. Blood.

Abs Jour: Ref. Zhur-Biol., No 6, 1958, 26794.

culin. In the case of transfusions involving a blood volume of 125 ml, even when there was increased sensitivity to tuberculin, transfusion reactions were observed relatively infrequently and were of a milder nature. Determination of tuberculin titer is recommended when there is a danger of adverse effects upon a patient from posttransfusion reactions. In cases of high sensitivity to tuberculin, one should initiate transfusions with a lower dose, increasing it subsequently if necessary.

Card : 3/3

FARDKIN, V.A.

Experimental studies on the phenomenon of passive allergy to tuberculosis antigen. Suvrem. med., Sofia 9 no.7:11-18 1958.

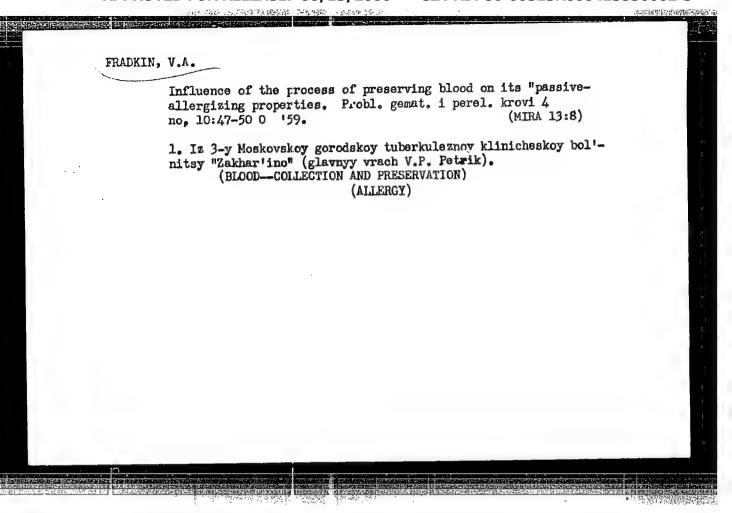
1. Iz 3-ta Moskovska gradska tuberkulozna bolnitsa Zakhar'ino (Gl. lekar:

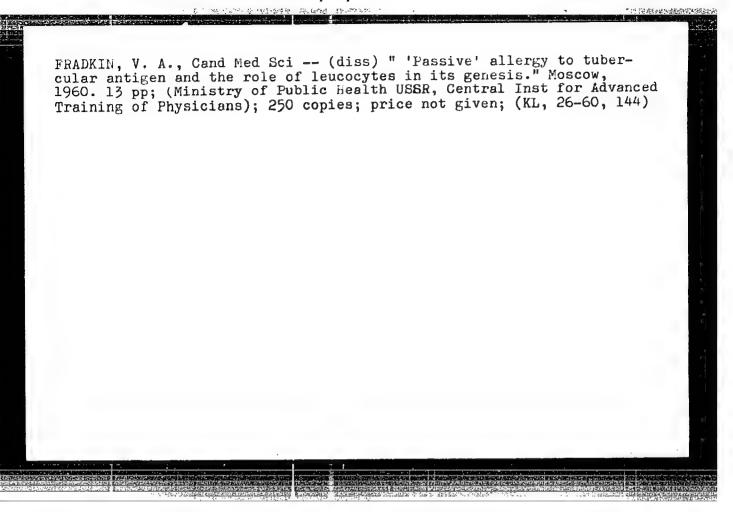
V. P. Petrik). i Katedrata po tuberkuloza pri TSIU (Profesor pri katedrata:

F. I. Levitin).

(TUBERCULOSIS, immunol.

passive allergy to buberc. antigen in animals (Bul))





Experimental study of the effect of active and "passive" forms of allergic reaction to tuberculous antigens on the reactivity of the organism to histamine. Pat.fiziol.i eksp.terap. 4 no.2:18-22 Mr-Ap '60. (MIRA 14:5) 1. Iz Moskovskoy klinicheskoy gorodskoy tuberkuleznoy bol'nitsy "Zakhar'ino" (glavnyy vrach V.P.Petrik). (HISTAMINE) (TUBERCULOUS)

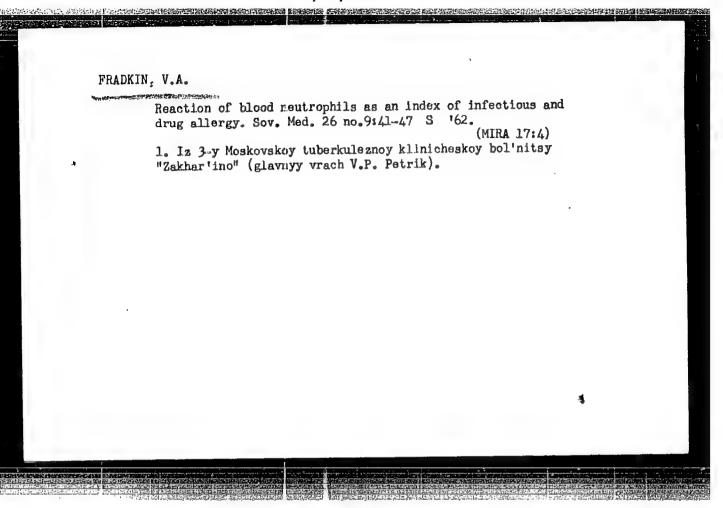
Results of a bacteriological study of resected cavities of tuberculous disintegration. Vrach. delo no.8:91-94 Ag '61. (MIRA 15:3) 1. 3-ya Moskovskaya klinicheskaya tuberkuleznaya bol'nitsa "Zakhar'ino". Nauchnyy konsul'tant laboratorii prof. L.M. Model'. (LUNGS—MICROBIOLOGY)

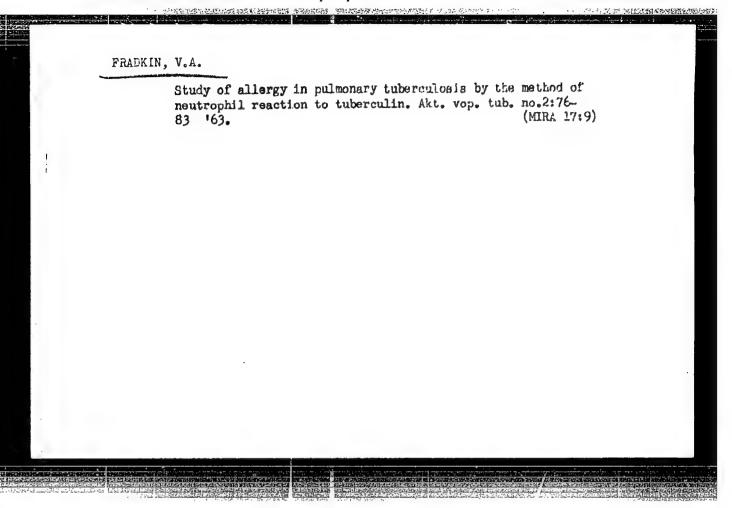
KHAYKIN, A.Ya.; FRADKIN, V.A.

Results of determining the level of a specific allergy in various forms of pulmonary tuberculosis. Sov. med. 25 no.10:33-37 0 '61. (MLRA 15:1)

1. Iz kafedry tuberkuleza (zav. - prof. A.Ye.Rabukhin) TSentral'nogo instituta usovershenstvovaniya vrachey (dir. - M.D.Kovrigina) i 3-y Gorodskoy klinicheskoy tuberkuleznoy bol'nitsy "Zakhar'ino" (nauchnyy rukovoditel' - prof. F.I.Levitin, glavnyy vrach V.P.Petrik). (TUBERCULIN_TESTING) (TUBERCULOSIS)

Method for the quantitative determination of urease activity in micro-organisms. Zhur.mikrobiol., epid. i immun. 33 no.3:42-46 Mr *62. (MIRA 15:2) 1. Iz 3-y moskovskoy klinicheskoy tuberkuloznoy bol*nitsy Zakhar*ino. (UREASE) (MICRO-ORGANISMS)





LEVITIN, F.I.; GOL'DSHTEYN, V.D.; PROKHOROV, Ye.P.; FRADKIN, V.A.

Tuberculin reactions in elderly persons with pulmonary tuberculosis. Trudy TSIU 63:56-63 '63. (MIRA 17:9)

1. Kafedra tuberkuleza TSentral'nogo instituta usovershenst-vovaniya vrachey i Klinicheskaya bol'nitsa "Zakhar'ino", Hoskva.

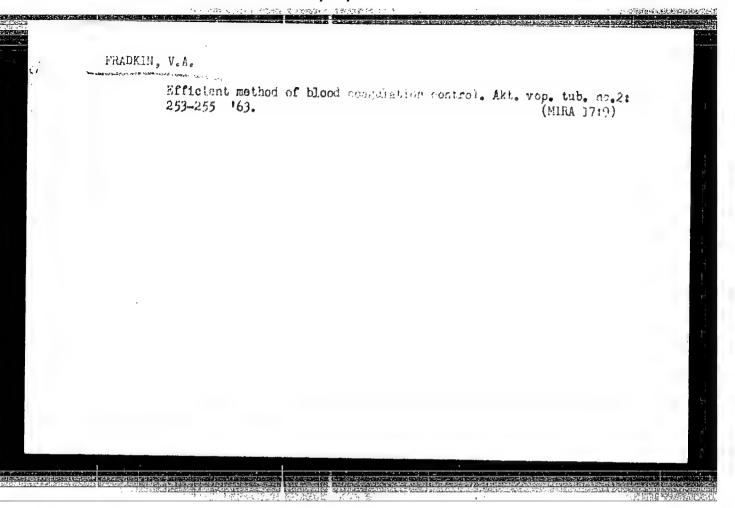
FRADKIN, V.A.

Evaluation of the allergic state of a body in vitro. Vestn. Akad. med. nauk SSSR 18 no.4:77-82 *63 (MIRA 17:4)

1. Moskovskaya klinicheskaya tuberkuleznaya bol'nitsa "Zakhar'ino".

FRADKIN, V.A.; Guddin, re.S.; Orang, L.E.

Materials on the determination of the protonomia ladex and anticoagulant therapy in a phthisioaurgical clinic. Act. vop. tub. no.2:246-252 163. (Mich 17:9)



LEVITIH, F.I.; GC. DENTLYN, V.B.; HORNERGY, V.B., _ MARIN, F.F.

Clinical importance of the diagnostic use of tuberculin. Akt.
vop. tub. no.2:82-91 163. (MIRA 17:9)

LEVITIN, F.I.; GOL'DSHTEYN, V.D.; KUDISH, E.A.; PROKHOROV, Ye.P.; FRADKIN, V.A.; CHAUSOVSKAYA, M.M.

Technic and evaluation of the results of tuberculin tests. Probl. tub. no.7:9-16 '63. (MIRA 18:1)

1. Iz kafedry tuberkuleza (zav. - zasluzhennyy deyatel' nauki prof. A.Ye. Rabukhin) TSentral'nogo instituta usovershenstvovaniya vrachey.

1. Gosudarstvennyy kontrol'nyy institut imeni L.A.Tarasevicha, Moskva.

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L 12810-66 EWT(1)/EWA(j)/T/EWA(b)-2 JK

ACC NR: AP5028186

SOURCE CODE: UR/0248/65/000/008/0064/0066

AUTHOR: Fradkin, V. A.

21

ORG: State Control Institute (Gosudarstvennyy kontrol'nyy institut im. L. A. Tarasevicha, Moscow

TITLE: Allergenic properties of the Grasse antigens of hemolytic streptococcus L-

SOURCE: AMN SSSR. Vestnik, no. 8, 1965, 64-66

TOPIC TAGS: antigen, streptococcus, immunology, microbiology

ABSTRACT: The author describes the allergenic properties of Grasse antigens (obtained by alternate freezing and thawing) from the L-forms of hemolytic streptococcus in a model of the Schwartzman phenomenon and on the cross-sensitizing effect between Grasse antigens of the same microorganism's bacterial and L-forms. The Schwartzman phenomenon was produced by Grasse antigens of the L-forms of hemolytic streptococcus Nos. 196-L and 409-L, antigens of the original culture of streptococcus No. 10-S, and antigens of streptococci of the reverting L-forms Nos. 196-p and

Card 1/2

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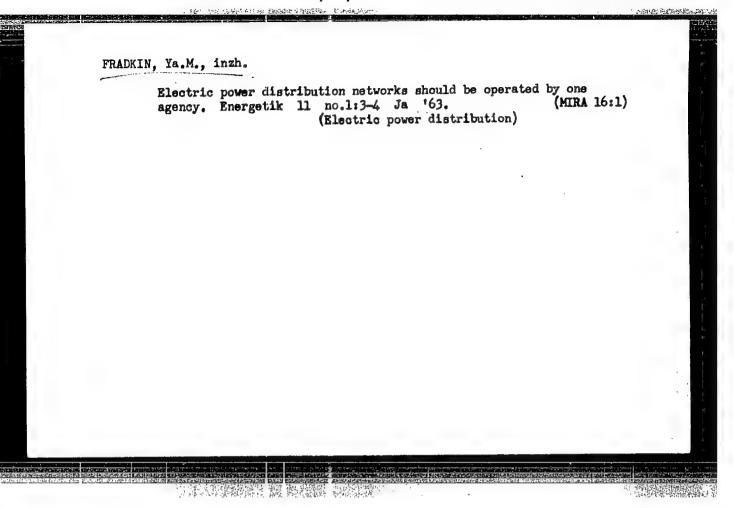
ACC NR:	66 ADEN2816	96						0.
409-p. The latter two antigens manifested their sensitizing property very distinctly. The Grasse antigens from the bacterial forms of the hemolytic streptococci tinctly. The Grasse antigens from the bacterial forms of the similar antigens from the Nos. 10-S and 196-p were superior in this respect to the similar antigens from the L-form cultures. A cross-sensitizing effect was noted in all the experiments between the Grasse antigens from the bacterial and L-forms of the streptococci. The initial sensitization to the L-forms gave rise to the Schwartzman phenomenon in response to the challenge injection of the bacterial forms of the streptococci, and								
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FRADKIN, V.A.; MEYEROVICH, Ye.G.

Materials of dynamic study of allergy to tuberculin by means of the blood neutrophil reaction in vitro. Sov.med. 28 no.12:10-14 D 165. (MIRA 18:12)

1. Kontrol'nyy institut meditsinskikh biologicheskikh preparatov imeni L.A.Tarasevicha (direktor - dotsent T.F. Mikhaylov) i Moskovskaya tuberkuleznaya klinicheskaya bol'nitsa "Zakhar'ino" (glavnyy vrach V.P.Petrik).

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ESTHONIA/General Problems of Pathology - Tumors. Human Tumors. : Ref Zhur - Biol., No 2, 1959, 3906 Abs Jour Barshteyn, Yu.A., Fradkin, Yd.P. Author : A Malignant Nevogenic Tumor with Multiple Metastases in Inst Title the Central Nervous System : Noukogude Ecsti tervishoid, Zdravookhr. Sov. Estonii, Orig Pub Sb. 5, 1956, 61-65 : The patient's disease began with a severe headache, particularly on the left side. Involvement of the III, V Abstract and VI pairs of cranial nerves was found on the left and multiple verrucoid structures in the skin of the hairy part of the head. The data of the history, clinical picture and histological examination of the verrucoid structures led to the conclusion that the patient had a nevogenic malignant tumor of the hairy part of the head with metastases to the skull, dura mater, brain, Card 1/2

ESTHONIA/General Problems of Pathology - Tumors. Human Tumors.

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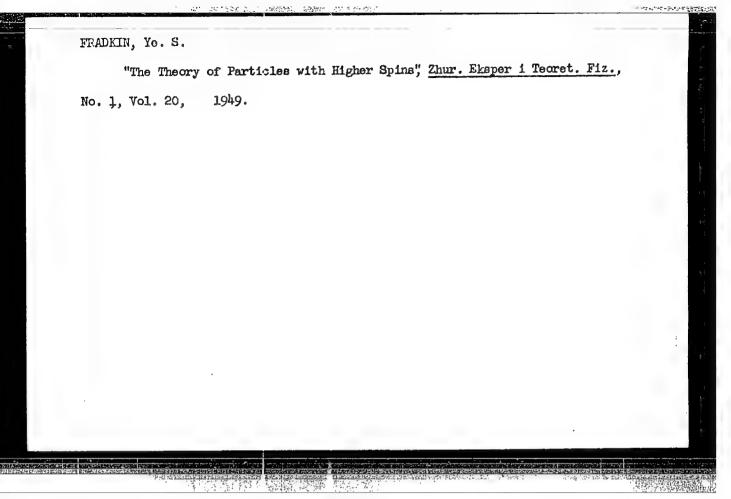
Abs Jour : Ref Zhur - Biol., No 2, 1959, 8906

AND THE RESIDENCE OF THE PROPERTY OF THE PROPE

sacrum, left lung and lymph nodes. This conclusion was confirmed by pathological examination, and metastases were also found in all the muscle groups including the diaphragm, heart muscle, storach submuces and intestinal submuces, kidneys, spleen, liver and other organs as well as in the skull vault. -- Ye.A. Skvirskaya

Card 2/2

- 54 -



FRADKIN, Ye. S.

"Problem of the Reaction of the Natural Field of a Charged Particle," Zhur. Eksper. i Teoret. Fiz., 20, No. 3, 1949.

Physics Inst. im. P.N. Lebedev, Acad. Sci. USSR

FRADKIN, Ye. S.

155T26

USSR/Mathematics - Tensor Physics - Spin Jan 50

"The Theory of Particles With Higher Spins," Ye. S. Fradkin, Phys Inst imeni P. N. Lebedev, Acad Sci USSR, 12 pp

"Zhur Eksper i Teoret Fiz" Vol XX, No l

Discusses method of obtaining equations for particles with given spin in spin-tensor form. Considers problem of uniqueness of these equations and problem of their disintegration in absence of a field. Submitted 20 Jun 49.

155T26

"APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000413530002-3

USSR/Physics - Electrons Mar 50
Field, Electric

"Problem of the Reaction of the Natural Field of a Charged Particle," Ye. S. Fradkin, Phys Instimeni P. N. Lebedev, Acad Sci USSR, 7 pp

"Zhur Eksper i Teoret Fiz" Vol XX, No 3

Shows improbability of existence of natural oscillatory motions of charged particles, as asserted by number of authors. Investigates equations of motion of particles with consideration for reaction of the natural field. Submitted 12 Sep 49.

FRADKIN, YE.S. USSR/Physics - Quantum electrodynamics, renormalization

FD-724

Card 1/1

: Pub. 146-12/18

Author

Fradkin, Ye. S.

metada a como de como de la como

Title

: Renormalization in quantum electrodynamics

Periodical

: Zhur. eksp. i teor. fiz., 26, 751-754, Jun 1954

Abstract

: Letter to the editor. Attempts to find such form of Green functions (J. Schwinger, Proc. Nat. Acad. Sci. 37, 452 (1951)) as to contain values expressed by experimental data of charge and mass of electron. Shows that the analysis can be simplified because of gradient invariance. Further detailed analysis will be the subject of a separate

article. One Soviet and two American references.

Institution

: Physics Institute imeni Lebedev, Acad. Sci. USSR

Submitted

: March 30, 1954

FRADKIN E.S.

USSR/Physics - Nuclear physics

Card 1/1 : Pub. 22 - 12/44

Authors

Fradkin, E. S.

Title

Green's functions for interaction between nuclons and mesons

Periodical

Dok. AN SSSR 98/1, 47-50, Sep 1, 1954

Abstract

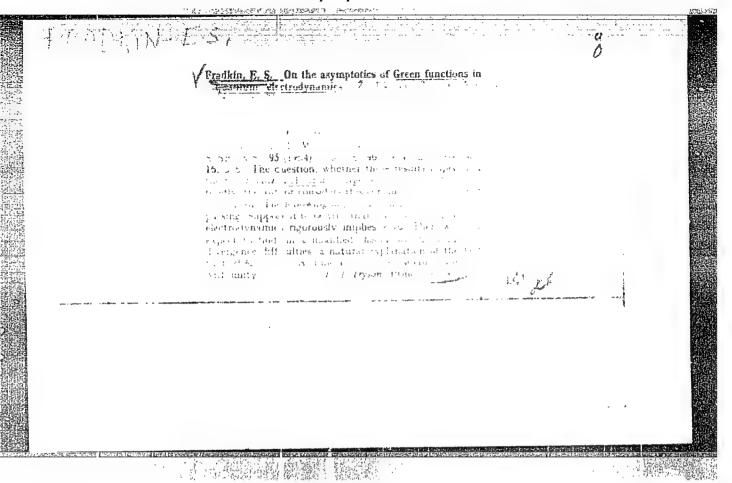
Derivation and solution are given of a system of functional equations (Green's functions) in the S-matrix expressing the interaction between nuclons and mesons. Three references (1951-1954).

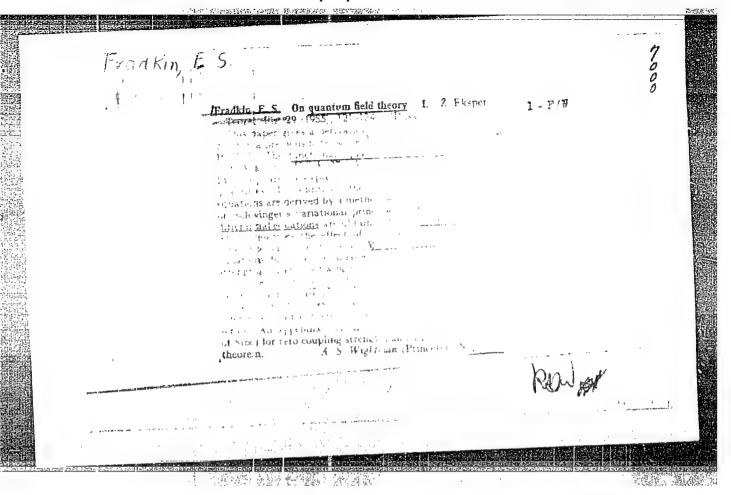
Institution

: Physical Institute im. P. N. Lebedev of the Acad. of Scs.

of the USSR

Presented by : Academician I. E. Tamm, April 14, 1954





USSR/Physics - Quantum electrodynamics

FD-2667

Card 1/1

Pub. 146 - 24/26

Author

Fradkin, Ye. S.

Title

: Certain general relations in quantum electrodynamics

Periodical

: Zhur. eksp. i teor. fiz., 29, August 1955, 258-261

Abstract

: In the present note the writer presents the derivation of certain general relations connected with the gradient invariance of quantum electrodynamics as discussed in his earlier works (ibid., 26, 752, 1954; DAN SSSR, 100, 897, 1955). He considers the relation for the case of the presence of an external source of photon field G, studied in functional form and by Green's functions. Five references: e.g.

L. D. Landau et alii, DAN SSSR, 95, 773, 1954.

Institution

: Physics Institute im. P. N. Lebedev, Academy of Sciences USSR

Submitted

: March 9, 1955

USSR/Nuclear Physics - Meson theory

FD-2979

Card 1/1

Pub. 146 - 20/28

Author

: Fradkin, Ye. S.

Title

Problem concerning the asymptote of the Green function in the

theory of mesons with weak pseudoscalar bond

Periodical

: Zhur. eksp. i teor. fiz., 29, September 1955, 377-379

Abstract

: In an earlier work (A. A. Abrikosov, A. D. Galanin, I. M. Khalatnikov, DAN SSSR, 97, 793, 1954) nonrenormed equations were used to find the asymptote of the Green function for the case of weak pseudoscalar interaction. In the present article the writer finds the asymptote of the nonrenormed equations for the same problem. Here the found asymptote coincides with the nonrenormed expression obtained in the above mentioned work. In contrast to this work the equations for the Green function in the present writer's form do not contain an infinities, and in the finding of the asymptote he did not have to seek small additions to the Green functions,

which considerably simplifies the calculation.

Institution

; Physical Institute im. P. N. Lebedev, Academy of Sciences USSR

Submitted

April 18, 1955

"APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000413530002-3

USSE Physics - Quantum fields

Card 1/1

Pub. 22 - 15/49

Authors

Fradkin, E. S.

Title

About the problem on the interreaction of two quantum fields

Periodical 1

Dok. AN SSSR 100/5, 897-900, Feb 11, 1955

Abstract

A non-trivial solution of the expectation Z represented by the matrix S is submitted. The matrix S is a system of functional equations expressing an interaction between two quantum fields (Fermi's and Bose's). The solution is given in the form, Z=AZ (for $g \neq 0$), where A is the operator dependent on the functional derivatives, S(A), for and S(A); J(A) is the source of meson field; and P and P are anticommunting sources of a nuclear field. (Trivial solution would be g=0, and $Z=Z0=\ldots$). Three references: 2 USSF and 1 British (1954).

Institution :

Acodemy of Sciences of the USSR, P. N. Lebedev Physical Institute

Fresenteu by:

Academician I. 4. Temm, October 16, 1954

HOUSE SHEET BEEN THE RE

FRALKIN, E.S.

USSR / PHYSICS SUBJECT

CARD 1 / 1

PA - 1655

AUTHOR

FRADKIN, E.S.

TITLE PERIODICAL

A Dispersion Relation for Any Scattering Angle. Zurn.eksp.i teor.fis,31, fasc.3, 515-517 (1956)

Issued: 12 / 1956

Here a connection between the imaginary- and real part of the scattering amplitude for any angle is determined. For this purpose the method developed by M.L.GOLDBERGER, Phys.Rev. 99, 979, 1955, is well suited, but here this dispersion relation is derived by using some results obtained by I.NAMBU, Phys.Rev., 100, 394 (1955).

At first, FEYNMAN'S matrix element of the scattering of a BOSE particle (with the momentum k and the charge index a) by a FERMI particle (with the momentum p and the other quantum numbers A) is written down. Investigation is carried out in a system of coordinates in which the total momentum of the nucleons is equal to zero. The dispersion relations are written down for the case that the polarization of the nucleon does not change. Within the energy domain of from 0 to ω_0 (ω denotes the variable energy of the meson) the "neutron state" and the entire spectrum of the states from $|m\mu - p^2| / |m^2 + p^2|^{1/2}$ to ω_0 make a contribution towards $A(\omega^*)$. The contribution made by the neutron state can be computed and an expression herefore is explicitly given. The final and very voluminous expression for the dispersion relation is explicitly given.

INSTITUTION: Physical Institute "P.N.LEBEDEV" of the Academy of Science in the USSR

CARD 1 / 2 USSR / PHYSICS

PA - 1295

SUBJECT. AUTHOR

FERIODICAL

TITLE

AVRORIN, E.N., FRADKIN, E.S. On the Problem of the Renormalizability of the Pseudoscalar Meson

Theory with Pseudovectorial Coupling.

Zurn.eksp.i teor.fis, 30, fasc.4, 756-760 (1956)

reviewed 9 / 1956 Publ. 4 / 1956

At first it is shown that the convergence of the pseudoscalar theory with pseudoscalar coupling is not improved also if, in the case of the propagation function of the mesons the corrections connected with the polarization of the

vacuum are taken into account. For a pseudoscalar meson field with pseudovectorial coupling, a formula, here shortly referred to as "equivalence theorem", holds good which is, in a certain sense, analogous to the theorem of the conservation of the current in quantum electrodynamics. Equations for the GREEN'S function of the spinorial field, which is defined according to J.SCHWINGER, Proc. Nat. Acad. Scie. 37, 452 (1951)), are given and transformed. Also the equation for the GREEN'S function of the meson field and an expression for the polarization operator are given.

Next, the polarization operator is specialized for the first perturbational approximation by inserting the corresponding summit part, and an equation following from the "equivalence theorem" is given. The integral contained therein occurs also in quantum electrodynamics where it is equal to zero because of the theorem of the conservation of the current. The corresponding proof by direct computation can only be accomplished by means of tricks.

CIA-RDP86-00513R000413530002-3

Žurn.eksp.i teor.fis, 30, fasc.4, 756-760 (1956) CARD 2 / 2 However, when carrying out the proof of the "equivalence theorem" in the momentum space the integration variable can be "shifted". The polarization operator is computed for k=0 and is then renormalized. Now the difference between the polarization operators computed by means of FEYNMAN'S method and those computed by the authors is demonstrated. This difference leads to no unambiguities on the occasion of the computation end of the part of the polarization operator, but it cannot be removed in the present theory. However, when using the equivalence theorem, it is possible to represent the polarization operator as a logarithmically divergent expression which can be renormalized without any tricks. The cause of the difficulties occurring on the occasion of the polarization of the vacuum is to be found in quantum electrodynamics and, in the case investigated here, also in the insufficient definition of a boundary value. This boundary transition must not destroy the general properties following from the basic equations of the theory. If, however, a proper boundary transition is chosen, the condition of gradient invariance in quantum electrodynamics and the "equivalence theorem" are satisfied in the above theory.

INSTITUTION: Physical Institute "P.N.LEBEDEV" of the Academy of Science in the USSR

PA - 1431

FRADKIN, E. CARD 1 / 2

USSR / PHYSICS SUBJECT FAJNBERG, V., FRADKIN, E.

A Dispersion Relation for FERMI Particles. LUTHOR TITLE

Dokl.Akad.Nauk, 109, fasc. 3, 507-510 (1956) Issued: 9 / 1956 reviewed: 10 / 1956 PERIODICAL

 $\langle p_{\lambda}, q_{\mu} | S | p_{\lambda}', q_{\mu}' \rangle = i \int dx dy \bar{v}^{\lambda}(p, x) \cdot \langle q_{\mu}, \alpha' | T \{ \Psi_{\alpha}(x) \Psi_{\beta}(y) \} | q_{\mu}', \beta' \bar{L}_{y} \bar{v}^{\lambda}(p', y) \}$ At first the matrix element: for the scattering of two fermions from the state with four-momenta p', q' and the polarizations \(\lambda'\) and \(\mu'\) into the state with the momenta p', q' and the

the polarizations Λ , and μ into the state with the momenta p', q' and the polarizations Λ , and μ are given. Here $|q_{\mu},\alpha\rangle$ - denotes the Heisenberg vector of the state of a fermion with the four-momentum: $q(\vec{q},q_0) = \sqrt{q^2 + M^2}$; ψ_{α} - the Heisenberg operators of the fermion, ψ_{α} - the golution of the free DIRAC equation with the four-momentum $p(\vec{p},p_0) = E = \sqrt{p+M^2}$ and solution of the free DIRAC equation with the four-momentum $p(\vec{p},p_0) = E = \sqrt{p+M^2}$ and the polarization λ ; $L_{\chi} = (\mu - \mu)$; $\bar{L}_{\chi} = (-\mu - \mu)$; $\bar{L}_{\chi} = (-\mu)$;

Next, an expression for forward scattering is given, viz. in a system in which the fermion with the four-momentum q is at rest. The matrix element then depends

The expressions obtained by M.L.GOLDBERGER, Phys.Rev.99, 979 (1955) have universal character. - Thus, the matrix element of nucleon-nucleon scattering for negative

Dokl.Akad.Nauk, 109, fasc.3, 507-510 (1956)

CARD 2 / 2

PA - 1431

energies can be expressed by the matrix element antinucleon-nucleon for positive energy. The sum of the amplitudes of the forward proton-proton and antiproton-proton scattering on this occasion becomes an even function of energy. The analogous difference then becomes an odd function of energy. Analogous symmetry properties are found with the sum (difference) of proton-neutron and antiproton-neutron scattering amplitudes (if the neutron is at rest at the beginning and at the end of the process). Within the domain $0 \le E \le M$ we find - in contrast to the case of meson-nucleon scattering - a whole spectrum of states, which also comprises a real coupled state, the deuteron.

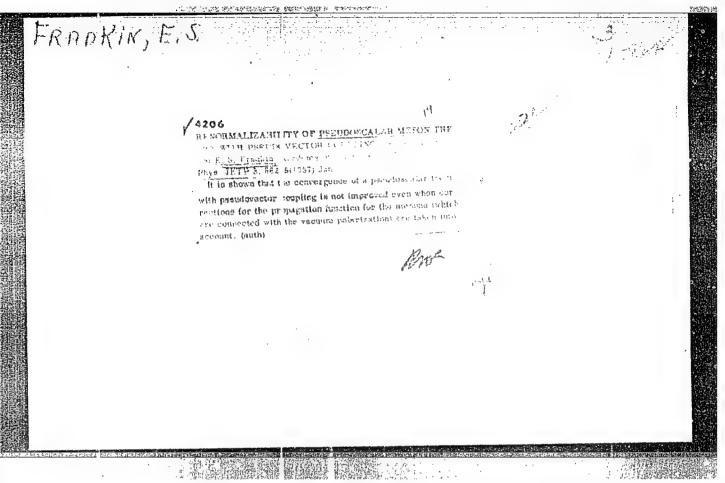
The contribution made by all the mentioned states in the domain $0 \le E \le M$ can be brought into connection with the physical quantities or may be expressed by known physical constants, namely: 1.) The contribution made by the state with a meson by the constant f of pseudoscalar interaction. 2.) The deuteron state by the binding energy ε of the deuteron. 3.) All other states making a contribution

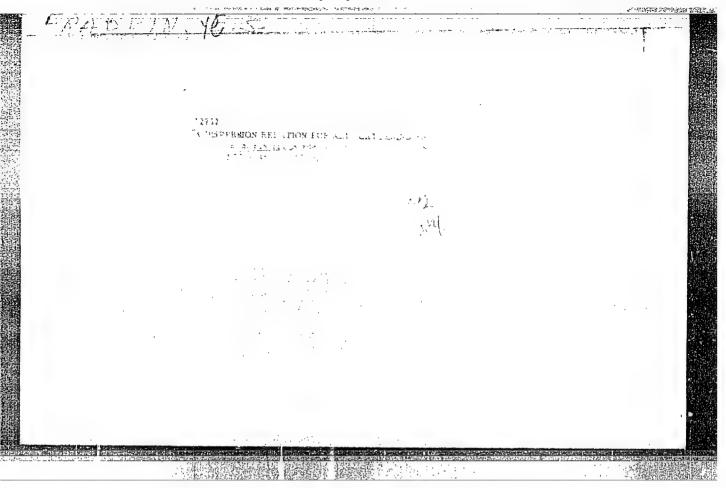
in the domain $0 \le E \le M$ - $2 \mu^2/M$ by the analytical continuation of the annihilation part of the total nucleon-antinucleon interaction cross section. The dispersion relation found in consideration of all that has been said above is explicitly given.

INSTITUTION: Physical Institute "P.N.LEBEDEV" of the Academy of Science in the USSR.

"APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000413530002-3





FRADKIN, E.S.

56-5-30/55

AUTHOR TITLE

On the Theory of the Transmission Processes in a

Plasma Situated in a Magnetic Field. (K teorii protsessov perenosa v plazme, nakhodysshcheysya

v magnitnom pole. - Russian) Zhurnal Eksperim. i Teoret. Fiziki 1957, Vol 32,

Nr 5, pp 1176-1187 (USSE)

ABSTRACT

PERIODICAL

The note under review develops the kinetic theory of a plasma which is situated in an electrical and in a magnetic field. The essence of the approximate method employed for the solution of the kinetic equation is the following: The terms of the expansion of the distribution function are determined, with the distribution being, related to a certain parameter of smallness. The appropriate parameter of smallness is characteristic of the given concrete problem. In this context, the so-called "local" distribution function is found, the significance of which is explained in greater detail in the paper under review. The equations utilized for the solution of the problem are generalisations of the known hydrodynamic equations.

CARD 1/3 .

56-5-30/55

On the Theory of the Transmission Processes in a Plasma Situated in a Magnetic Field.

First of all, the paper under review writes down the kinetic equation for the particles of the kind s which in presence of an electric and of a magnetie field, are in a mixture with particles of other kinds. Then a transition is made, in this system of equations, to other independent variables. This equation is solved by expanding the corresponding solution ansatz in a serios with respect to the above-mentioned small parameter. In an axially symmetrical problem, the following parameters have to be dealt with? L - dimensions of the system, 1 - range, R - Larmor's radius. Then the author of the paper under review proceeds to investigate the stationary axially symmétrical problem of the mixture of two charged games in a strong magnetic field. The next chapter deals with the transmission phenomena in a mixture of electrons and ions for a stationary problem with arbitrary symmetry. In this case, we are concerned with the expansion parameters R/L and 1/L. Let the gradients of the concentrations be directed vertically to the magnetic field. Then the author of the paper under review proceeds to discuss the transmission phenomena

CARD 2/3

56-5-30/55

On the Theory of the Transmission Processes in a Plasma Situated in a Magnetic Field.

in a mixture of electrons and ions which is situated in a weak magnetic field. For the sake of generality, the instationary problem is dealt with. Finally, investigation is made of a plasma in a strong magnetic field with weak deviation from the axial symmetry as well as of a plasma consiting of electrons and ions in an electromagnetic field variable with respect to space and time. (No reproductions).

ASSOCIATION:

Institute of Physics "P.N. Lebedev", Academy of Sciences of the USSE.

PRESENTED BY:

SUBMITTED:

5.7. 1956.

AVAILABLE:

Library of Congress.

CARD 3/3

24(5) AUTHOR:

Fradkin, Ye. S.

SOV/56-36-3-61/71

TITLE:

On a Relation in Quantum Statistics (Ob odnom sootnoshenii

v kvantovoy statistike)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,

Vol 36, Nr 3, pp 951 - 953 (USSR)

ABSTRACT:

The density matrix & can be written down as

 $\beta = e^{-\beta H}$, $H = H_0 + H_1 = \int [H_0(x) + H_1(x)] d^3x$; $\beta = 1/kT$ (H= Hamiltonian system, $H_0 = \text{"free" Hamiltonian}$, $H_1 = \text{inter-}$ action Hamiltonian). For HA = Ha+ AH instead of H it holds that

 $-\frac{\partial g}{\partial \beta} = (H_0 + \lambda H_1)g$. The formal operator solution of this

equation then is

 $\hat{\mathbf{e}} = e^{-\beta H_0} \mathbb{E} \left\{ \exp(-\lambda \int H_1(xt) dt d^3x) \right\}$

(Integration over t from 0 to β). T denotes the arrangement ordered from right to left according to growing powers of t.

For an arbitrary operator f(xt) it is assumed that

Card 1/3

On a Relation in Quantum Statistics

SOV/56-36-3-61/71

 $f(xt) = e^{tH_0}f(x)e^{-tH_0}$. For the determination of all thermodynamical quantities it is sufficient to know

Z= ln Sp $e^{\alpha N-\beta H}$; N denotes the operator of the total number of particles and commutes with the total Hamiltonian; $\alpha=\beta\mu$, μ then is the chemical potential. For Z the author derives the following formula:

 $Z = Z_0 - \int_0^R \frac{\mathrm{d}g!}{g!} \int M(xt, x!t!) G(x!t!, xt) \mathrm{d}^3x \mathrm{d}t \mathrm{d}t! \mathrm{d}^3x!$ (8)

This relation holds if H does not contain the charge g; M denotes the mass operator of the Green's (Grin) single particle function $G(xt,\,x^{t}t^{t})$ (integration with respect to t and t' from 0 to β). In this way all statistical characteristics of systems can be written down by means of the mass operator of Green's single particle function. Thus, it is easily possible by means of (8) to derive the known relation for the energy of the ground state (β = ∞ , T=0).

Card 2/3

On a Relation in Quantum Statistics

SOV/56-36-3-61/71

$$\overline{E} = E(g=0) + \int_{0}^{g} \frac{dg!}{g!} \int M(x\beta,x't')G(x't',x\beta)d^{3}xd^{3}x'dt'.$$

There is 1 reference.

ASSOCIATION:

Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute imeni P. N. Lebedev of the Academy of

Sciences, USSR)

SUBMITTED:

November 29, 1958

Card 3/3

"APPROVED FOR RELEASE: 06/13/2000 C

CIA-RDP86-00513R000413530002-3

24(5)

AUTHOR:

Fradkin, Ye. S.

SOV/56-36-4-47/70

TITLE:

The Method of Green's Functions in Quantum Statistics (Metod

funktsiy Grina v kvantovoy statistike)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,

Vol 36, Nr 4, pp 1286-1298 (USSR)

ABSTRACT:

Recently, a number of methods deviating from the usual thermodynamic perturbation theory in statistics and from the usual perturbation theory in the multiparticle theory have been published. The methods differ considerably from one another, and their explanation is complicated. The author of the present paper found a more general method of dealing with quantum-statistical problems, which is not connected with the perturbation theory, but is based upon the use of Green's functions (which have already been successfully applied to the case T=0, and by Matsubara (Ref 3) also to $T\neq 0$ (Feynman method)). The problem of setting up closed equations

for these Green's functions in the x-space was, however, not definitely solved, and in particular, transition to the p-space, which is of importance for the practical solution,

Card 1/3

has not yet been investigated. This development of the

The Method of Green's Functions in Quantum Statistics S07/56-36-4-47/70

physics of high energies makes it necessary to develop the apparatus of quantum statistics in consideration of the relativistic corrections and second quantization of the Hamiltonian of the system. For the investigation of the energy spectrum of the system it is also necessary to know the time-dependence of Green's function. These problems are investigated in the present paper. (Also Abrikosov, Gor'kov, and Dzyaloshinskiy carried out similar investigations (Ref 12)). It is shown that various methods of statistical physics in the multiparticle theory as well as their generalizations obtained for the case T # 0 (e.g. Debye-Hueckel, the Hartree-Fok, the Thomas-Fermi, the Gell-Mann, and Brueckner methods), are contained in the equations obtained in simple approximation. Also the transition to time-dependent Green's functions is investigated, and a method for the determination of the energy spectrum of the system is developed. These investigations are intended to be continued in a publication yet to follow. The author finally thanks I. Ye. Tamm, V. L. Ginzburg, and D. A. Kirzhnits for their interest and discussions. There are 12 references, 8 of which are Soviet.

Card 2/3

The Method of Green's Functions in Quantum Statistics SOV/56-36-4-47/70

Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute imeni P. N. Lebedev of the Academy of ASSOCIATION:

Sciences, USSR)

SUBMITTED: December 19, 1958

Card 3/3

"APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000413530002-3

24(5) AUTHOR:	Fradkin, Ye. S.	SOV/56-36-5-36/76
TITLE:	A Cartain Improvement of the Thomas-Fermi Model at Small Distances (Nekotoroje utochneniye modeli Tomasa-Fermi na malykh rasstoyaniyakh)	
PERIODICAL:	Zhurnal eksperimental'noy i teoreticheskoy fiziki,1959, Vol 36, Nr 5, pp 1533-1535 (USSR)	
ABSTRACT:	In the present paper the author suggests a quantum correction to the Thomas-Fermi model which corresponds to the masiclassical approximation of the Hartree equation $\Delta B = -C \int_{\text{nuc}} \frac{8fe}{(2/h)^3} \int_{\mathbb{R}^3} (\hat{\mathbf{H}}) d^3p$	
	that (1) coincides with the saggested that this term is	to be taken into account with
	$\begin{cases} f(\mathbf{H}) = (1 + \exp\{(\mathbf{H} - u)\mathbf{H}\})^{-1} \\ f(\mathbf{H}) = (1 + \exp\{(\mathbf{H} - u)\mathbf{H}\})^{-1} \end{cases}$	and $\hat{H} = (\hat{p} - i\hbar \nabla)^2/2m - eB(\hat{r})$ nucleus, $\beta = 1/kT$, \hat{H} the Hamilton
Card 1/3	Thomas-Fermi model is obtain	pproximation). A generalization of the ed, which makes it possible to of the atoms with considerably

A Certain Improvement of the Thomas-Fermi Model at Small SOV/56-36-5-36/76 Distances

better agreement with the experiment. The following is obtained:

Eaverage 15.9 Z^{7/3}ev for 50 = Z = 90.

Numerical computation for a number of nuclei leads to the following result:

Z E_{comp}Z^{-7/3} [e v] (E_{exp}-E_{comp})/E_{exp}
26 15,9 0,06
36 16,2 0,053
54 16,7 0,047
80 16,9 0,05
92 17,1 0,056

Computations are carried out for $\lambda = 0.9 \text{ g}^{2/3}$, which corresponds to an/ E_{\min} -value, which corresponds to the double energy of the

lowest level of the hydrogen atom. The author thanks D. A. Kirzhnits for discussions and L. V. Pariyskaya for carrying out numerical computations. There are 1 table and 2 Soviet references.

ASSOCIATION 2

Fizioheskiy institut im. P. N. Lebedeva Akademii nauk SSSR

A Certain Improvement of the Thomas-Fermi Model at Small SOV/56-36-5-36/76

(Physics Institute imeni P. N. Lebedev of the Academy of Sciences, USSR)

SUBMITTED:

November 29, 1958 (initially) and January 7, 1959 (after revision)

Card 3/3

24 (5) AUTHOR: Fradkin, Ye. S. SOV/20-125-1-16/67 TITLE: Functional Equation and Operator Solution for a Statistical Sum (Funktsional'noye uravneniye i operatornoye resheniye dlya statisticheskoy summy) Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 1, pp 66-68 (USSR) PERIODICAL: ABSTRACT: The density matrix of the canonic assembly has the form $Q = \exp \left[-\beta (H + \mu N)\right]$. In this connection $\beta = 1/kT$ and $H = H_1 + H_2$ the total Hamiltonian of the system, H_0 - the Hamiltonian of the free fields, \textbf{H}_1 - the Hamiltonian of interaction, $\mu\text{--}$ the chemical potential, N - the operator for the total number of particles which are conserved (e.g. of electrons minus protons). By the usual methods of the field theory one obtains $Q = \exp \left[-\beta(H_0 + \mu N)\right] = \exp \left[-\int dx_4 \int d^3x H_1(xx_4)\right],$ where T denotes the ordered arrangement of the operators from right to left in the sequence of increasing x4, the operator $f(\vec{x}, x_4)$ being defined by the equation Card 1/4 $f(\vec{x}, x_4) = \exp[(H_0 + \mu H)x_4] f(\vec{x}) \exp[-(H_0 + \mu N)x_4].$

507/20-125-1-16/67

Functional Equation and Operator Solution for a Statistical Sum

In analogy with the quantum field theory the author generalizes the Hamiltonian of the system, by adding an additional interaction with the external sources of the Bose- and Fermi-fields. The further investigation is made without affecting the generality for the case of interaction of a Fermi-field ψ with the mass m with a scalar Bose-field with the mass zero. In this case the interaction Hamiltonian runs as follows:

$$\begin{split} & \mathbf{H}_{1}(\overrightarrow{\mathbf{x}},\ \mathbf{x}_{4}) = -\int \left\{ \widetilde{\boldsymbol{\gamma}}(\overrightarrow{\mathbf{x}},\ \mathbf{x}_{4}) \boldsymbol{\psi}(\overrightarrow{\mathbf{x}},\ \mathbf{x}_{4}) + \widetilde{\boldsymbol{\psi}}(\overrightarrow{\mathbf{x}},\ \mathbf{x}_{4}) \boldsymbol{\eta}(\overrightarrow{\mathbf{x}},\ \mathbf{x}_{4}) + \\ & + \left[\mathbf{J}(\overrightarrow{\mathbf{x}},\ \mathbf{x}_{4}) + \mathbf{g} \widetilde{\boldsymbol{\psi}}(\overrightarrow{\mathbf{x}},\ \mathbf{x}_{4}) \boldsymbol{\psi}(\overrightarrow{\mathbf{x}},\ \mathbf{x}_{4}) \right] \boldsymbol{\psi}(\overrightarrow{\mathbf{x}},\ \mathbf{x}_{4}) \right\} \mathrm{d}^{3}\mathbf{x}, \end{split}$$

where J-denotes the source of the Bose-field, η - the source of the Fermi-field; η and η anticommute both among one another and with ψ and ψ . The equations holding for the operators ψ and φ (the sign \uparrow over ψ and φ is left out in the following)

are:
$$(\hat{i}\hat{p} + m - g\varphi)\psi(\vec{x}, x_4) = \eta(\vec{x}, x_4), \ \ddot{\psi}(\vec{x}, x_4)(-\hat{i}\hat{p} + m - g\varphi) = \ddot{\eta}(\vec{x}, x_4), -\hat{k}^2\psi(\vec{x}, x_4) = J(\vec{x}, x_4) = J(\vec{x}, x_4) + \ddot{k}^2\psi(\vec{x}, x_4) = J(\vec{x}, x_4) = J(\vec{x}, x_4) + \ddot{k}^2\psi(\vec{x}, x_4) = J(\vec{x}, x_$$

+ $gSp\vec{\psi}(\vec{x}, x_4)\psi(\vec{x}, x_4)$. In this case it holds

Card 2/4

SOV/20-125-1-16/67

Functional Equation and Operator Solution for a Statistical Sum

$$\hat{\mathbf{p}} = -\mathrm{i} \left[\gamma_{\mathbf{k}} \, \frac{\partial}{\partial \mathbf{x}_{\mathbf{k}}} + \gamma_4 (\frac{\partial}{\partial \mathbf{x}_4} - \mu) \right] = -\mathrm{i} \gamma_{\mathcal{V}} \partial_{\gamma_i}$$

$$\hat{k}^{2} = \frac{\partial^{2}}{\partial x_{k}^{2}} + \frac{\partial^{2}}{\partial x_{4}^{2}}; k = 1, 2, 3; \gamma = 1, 2, 3, 4; \partial_{4} = \frac{\partial}{\partial x_{4}} - \mu$$

The preceding equations differ from the Heisenberg equations of field theory as follows: 1) instead of time they contain $-ix_4$, whereby the four-dimensional space becomes Euclidean,

2) they contain the chemical potential. The following functional equations then result therefrom for :

$$(i\hat{p} + m - g\frac{g}{gJ})\frac{\delta p}{\delta \tilde{\eta}(x)} = \eta(x)q, \frac{\delta e}{\delta \eta(x)}(-i\hat{p} + m - g\frac{g}{\delta J}) = + \tilde{\eta}(x)q -$$

$$-\hat{k}^2 \frac{\delta e}{\delta J} = J(x)e + gSp \frac{\delta^2 e}{\delta \eta(x)\delta \tilde{\eta}(x)}$$

The operator solution for the statistical sum is then derived. The expression for this solution also may be easily written down as an infinitely dimensional integral. There are 4 references, 1 of which is Soviet.

Card 3/4

SOV/20-125-1-16/67 Functional Equation and Operator Solution for a Statistical Sum

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR

(Physics Institute imeni P. N. Lebedev of the Academy of

Sciences, USSK)

PRESENTED: November 20, 1958, by I. Ye. Tamm, Academician

SUBMITTED: October 28, 1958

Card 4/4

24(5)
AUTHOR: Fradkin, Ye. S. SOV/20-125-2-18/64

TITLE: The Method of Green Functions in Quantum Statistics (Metod funktsiy Grina v kvantovoy statistike)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 2, pp 311-314 (USSR)

In an earlier paper (Ref 1) a system of functional equations was derived for the state integral in quantum statistics. In the present paper the method of Green!" functions was investigated for the solution of these functional equations. Here the author has the application of the results found in the course of the present investigation to processes of high and low energies in mind, and therefore the entire operation is formulated in consideration of the relativistic corrections. The author investigates the interaction between the Fermi-field ψ of the mass m and the Bose-field ψ of the mass x. In this case the system of equations

 $(i\beta + m - ig \eta \frac{d}{dJ(x)}) \frac{dz}{d\tilde{\eta}(x)} = \eta(x)z,$

Card 1/3

The Method of Green Functions in Quantum Statistics

507/20-125-2-18/64

$$(-\frac{\partial^2}{\partial x_v^2} + \chi^2) \frac{\partial z}{\partial J(x)} = J(x)z + ig Sp \frac{\partial^2 z}{\partial \bar{\eta}(x)\partial \bar{\eta}(x)}$$
 with

 $z = Tr(f(\hat{H} - \mu \hat{N}))$ is obtained for the integral of state. Here $f(\hat{H} - \mu \hat{N})$ denotes the density matrix of the canonic assembly; \hat{H} - the operator of the complete Hamiltonian of

assembly; H - the operator of the complete Hamiltonian of the system, including the external sources of the Bose-field (J(x)) and of the Fermi-field (η) ; H = H₀ + H₁; H₀

denotes the Hamiltonian of the free fields. Al α the expression for H_1 is explicitly written down. The author does not commit

himself with respect to the exact form of the interaction γ and the invariance properties of the field φ . A system of equations is then derived for the "single-particle" Green's functions, which were for the first time introduced by Matsubara (Ref 2). This system of equations may be simplified, and the necessary boundary conditions may be derived from the spectral representations for the introduced quantities. The "single-particle" functions G,D, Γ depend only on the difference

Card 2/3

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CIA-RDP86-00513R000413530002-3"

The Method of Green Functions in Quantum Statistics

SOV/20-125-2-18/64

of the coordinates. Following this, the system of equation is written down also in p-representation. By means of the aforementioned Green functions it is possible to derive also the time-dependent functions of quantum statistics. The system of equations derived here offers considerable advantages as against its field-theoretical analogue: 1) For its derivation the stability of the ground state and of the single-particle state were not used in connection with the beginning of interaction. 2) Because of the Euclidity of the x-space Green's functions in the p-space have no poles, and division by G^{-1} , D^{-1} is always unique. There are 2 references, 1 of which is Soviet.

ASSOCIATION:

Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute imeni P. N. Lebedev of the Academy of Sciences, USSR)

PRESENTED:

December 1, 1958 by I. Ye. Tamm, Academician

SUBMITTED:

November 18, 1958

Card 3/3

FRADKIN, Ye. S., Doc Phys-Math Sci -- (diss) "Method of Green's functions in the theory of quantum fields and in quantum statistics." Moscow, 1960. 9 pp; (Academy of Sciences USSR, Inst of Theoretical and Experimental Physics); 100 copies; price not given; bibliography at end of text (40 entries); (KL, 25-60, 125)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413530002-3"

FRADKIN, Ye.S.

Some general relations in statistical quantum electrodynamics.

Zhur. eksp. i teor. fiz. 38 no.1:157-160 Jan *60. (MIRA 14:9)

 Fizicheskiy institut im. P.N.Lebedeva AN SSSR. (Quantum electrodynamics)

KIRZHNITS, D.A.; FAYNBER, V.Ya.; FRADKIN, Ye.S.

Structure of Green's function of a photon. Zhur. eksp. i teor.
fiz. 38 no.1:239-242 Jan '60. (MIRA 14:9)

1. Institut im. P.N.Lebedeva AN SSSR.
(Potential, Theory of) (Photons)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413530002-3"

MILEKHIN, G.A. [deceased]; FRADKIN, Ye.S.

Log-log approximation in quantum electrodynamics. Zhur. eksp.
1 teor. fiz. 45 no.6:1926-1939 D '63. (MIRA 17:2)

1. Fizicheskiy institut imeni Lebedeva AN SSSR.

ACCESSION NR: AP4025934

5/0056/64/046/003/1025/1032

AUTHORS: Babak, V. G.; Ignatovich, V. K.; Fradkin, Ye. S.,

TITLE: Asymptotic value of the interaction cross section of two Fermi particles in the e4 approximation

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 46, no. 3, 1964, 1025-1032

TOPIC TAGS: Fermi particle, high energy Fermi particle, interaction cross section, asymptotic cross section doubly logarithmic accuracy, e⁴ approximation, electron electron scattering, electron positron scattering, electron muon scattering, muon pair production, electron pair annihilation, colliding beam experiment, Regge pole trajectory, perturbation theory series

ABSTRACT: The purpose of the study is to establish correct expressions for the following cross sections: electron-electron scattering,

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Card 1/3

ACCESSION NR: AP4025934

electron-positron scattering, electron-muon scattering, and muon pair production following annihilation of an electron pair. Asymptotic values valid for all angles are obtained (in the e⁴-approximation) with doubly-logarithmic accuracy for the cross section of interaction of two high energy Fermi particles. These asymptotic values are of interest in view of the planned colliding-beam experiments proposed to check on the laws of electrodynamic at small distances, and also in view of attempts at obtaining the Regge-pole trajectory with the aid of perturbation theory series. It is shown that near 180° the electron positron cross section decreases, in agreement with the work of Milekhin and Fradkin (ZhETF v. 45, 1926, 1963), and in sharp contrast with the results of A. A. Abrikosov (ZhETF v. 30, 545, 1956). Misprints contained in papers of other investigators are pointed out. Orig. art. has: 1 figure and 44 formulas.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR

Card 2/3

"APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000413530002-3

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ACCESSION NR: AP4025934		editioning the analysis of the second of the second of	
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FRADKIN, Ye.S.

Method of Green's functions in quantum field theory and in quantum statistics. Trudy Fiz. inst. 29:7-138 '65.

Stability of an arbitrary one-dimensional hydrodynamic flow. lbid.:250-256

Refraction and reflection of a shock wave from the interface of two media of different density. Ibid.:257-278 (MIRA 18:8)

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BELEN'KIY, S.Z. [deceased]; FRADKIN, Ye.S.

Turbulent mixing theory. Trudy Fiz. inst. 29:207-238 '65.
(MIRA 18:8)

FRADKINA, D. L. Cand Agr Sci -- (diss) "The Influence of Square Characteristic plants on the Growth and Square Nest Distribution of Sugar Beet Plants on the Growth and Development of Sugar Beet Under Conditions of the Humid Climate of the Latvian SSR." Mos, 1957. 18 pp 20 cm. (Mos Order of Lenin Agricultural Academy im K. A. Timiryazev), 110 copies (KL, ZKEX 25-57, 116)

- 108-

USSR/Cultivated Plants - Commercial. Oil-Bearing. Sugar-Bearing. M-5

Abs Jour : Ref Zhur - Biol., No 7, 1958, 29942

Author

: Fradkina, D.L.

Inst Title

: Features of Sugar Beet Growth and Development with

Square Planting.

Orig Pub : Sakharnaya svekla, 1957, No 2, 23-31

Abstract : Field tests with the MaE, V23, Yanash and J752 varieties

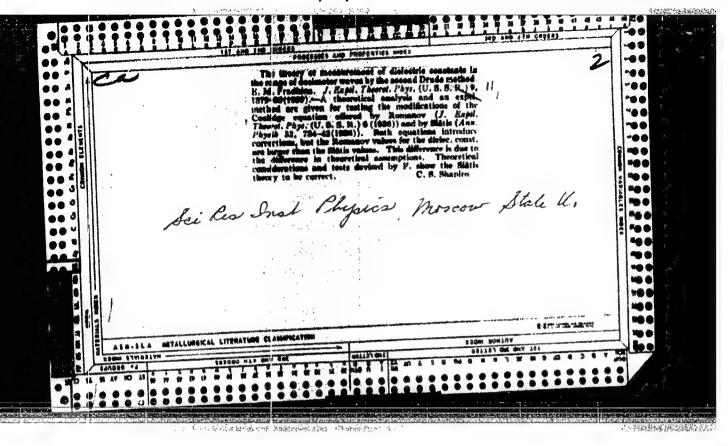
were made at the Mezhotnenskaya Experimental Selection Station in the Latvian SSR in 1952-1954 on turf carbonate soil. The square planting placement stimulated the intensive leaf and root growth in the sugar beet plants. In 1952 the average root weight at the end of vegetation in square beds reached 1462, and with ordinary beds 528 g.; in 1953 it was respectively 2352 and 791 g. The saccharinity of the roots with square planting was 18.3%

in 1953, and with ordinary planting 19.6%.

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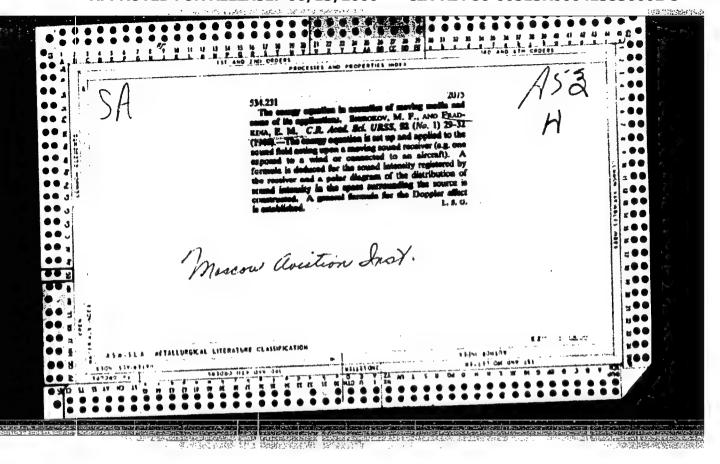
FRADKINA, D. L.

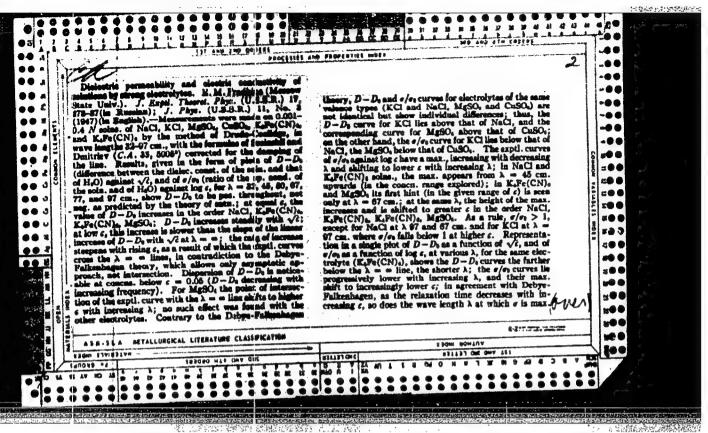
Cand Agr Sci - (diss) "Change in the biological characteristics of varieties of sugar beet under various conditions of growing and selection." Kiev, 1961. 22 pp; (Ministry of Agriculture Ukrainian SSR, Wkr Academy of Agr Sci); 180 copies; free; (KL, 7-61 sup, 253)

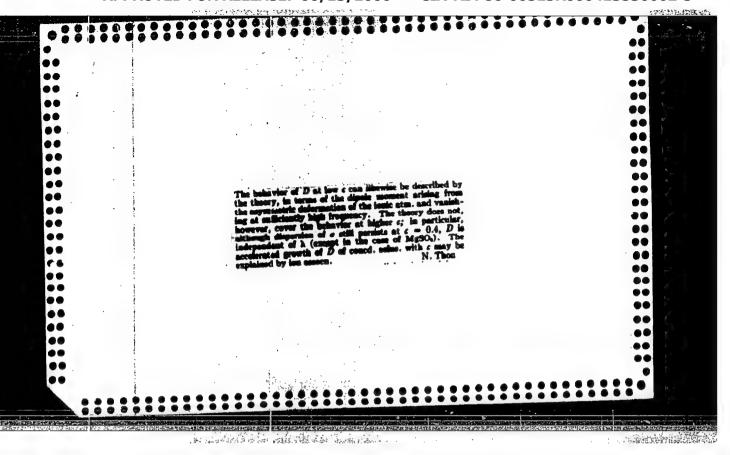


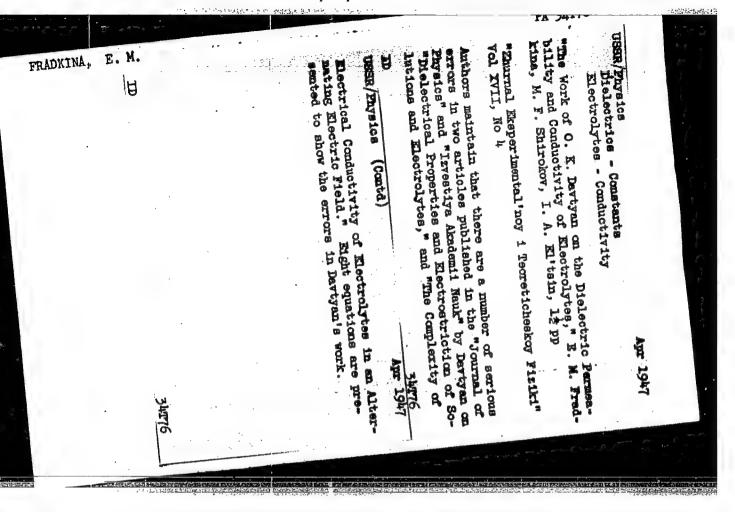
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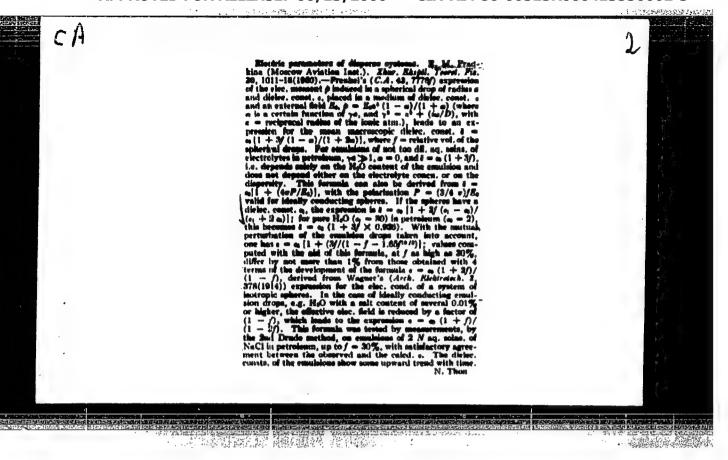


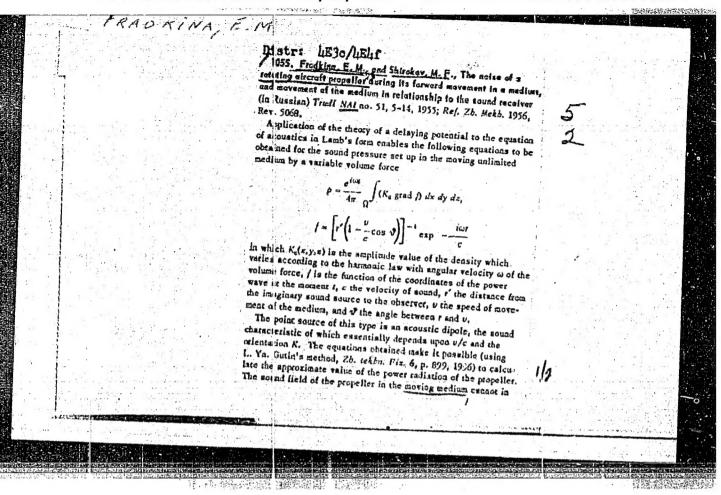
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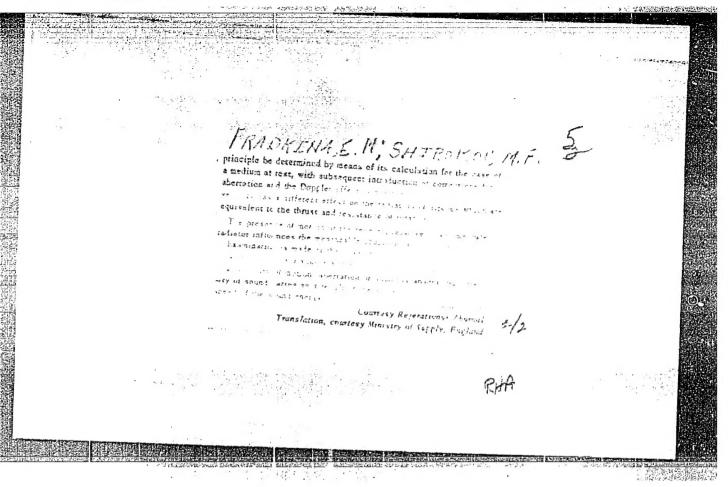
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USS	R/Chemistry - Dispersed Systems May/Jun 1948 Chemistry - Electric Moments		25
Tre	ectrical Parameters of Dispursed Systems," Ya. I. nkel', E. M. Fradkina, Phys Tech Inst, Acad Sci R, Leningrad, 4 pp		,
"Ko	lloid Zhur" Vol X, No 3		
- đượ	w how Frenkel's formula for electrical moments in- ed in conducting ball-shaped drop can be used for ing subject calculations. Submitted 28 Aug 1947.		
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FRAPKINATE USSR/Electricity - Dielectrics

G - 2

Abs Jour

: Referat Zhur - Fizika, No 5, 1957, 12102

Author

Inst

: Fradkina, E.M.

Title

Method of Measuring the Dielectric Constant of Conducting

Liquids and Dispersed Systems in UHF Fields.

Orig Pub

: Kolloid. zh. 1956, 18, No 4, 480-484

Abstract

: A method is proposed for measuring the dielectric constant of strongly-conducting liquids and dispersed systems in UHF fields with the aid of a measuring capacitor of new construction. The proposed capacitor has electrodes that are insulated from the investigated liquid and is mechanically stronger than those previously employed. It is calibrated by means of standard liquids. Examples are given of calibration curves for two wave lengths ($\lambda_1 = 166$ cm and $\lambda_2 = 99$ mm), and values are obtained for the dielectric constants of solutions of NaCl from O-N to 4-N.

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Analysis is made of the errors of the method and ways are indicated for reducing these errors (increasing the theorem of the calibration curve, and decreasing the capacity of

FRAPKINA E. DT.

USSR/Colloid Chemistry. Dispersion Systems

B-14

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 26416

Author : E.M. Fradkina, S.F. Khmunin

Title : Temporal Dependence of Dielectric Constant of Emulsions

Orig Pub : Kolloid. zh., 1956, 18, No 5, 604-608

Abstract : The dependence of the dielectric constant ($\mathcal E$) of emulsions

(E) of distilled water and of 2 n. NaCl solution in heavy mineral lubricating oil and in fuel oil (mazut) on the time of measurement was investigated. & was measured by the pulsation method at the frequency of 1 megacycle and by the second Drude method at 180, 300 and 1070 megacycles. A rapid rise of & was observed at 1 megacycle; the speed of the rise increased together with the rise of the concentration of the dispersion phase and with the drop of the viscosity of the dispersion medium; & is greater in E-s of NaCl solutions than in E-s of water. It is surmised that the dependence on time at a given frequency is connected with the formation of chains of drops of the dispersion phase. The rise speed of & in ultrahigh frequency fields is several times less; it depends on the tem-

perature, the viscosity of the dispersion medium, and the dif-

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